CLAIMS

What is claimed is:

1. A portable digital terminal (PDT) for receiving, recording and playback of digital audio/visual (A/V) data, said PDT comprising:

5   a memory having a plurality of memory segments, wherein a first memory segment stores a first received image;

a buffer for temporarily storing a second received image; and

a processor for storing said second received image in a second memory segment if a condition equals a first state, and not if said condition equals a second state.

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2. A PDT according to claim 1 wherein said second received image is stored in said first memory segment if said condition equals said second state.

3. A PDT according to claim 1 wherein said condition is measured by a device taken 15 from the group consisting of an image differencer, a clock mechanism, a voice activated device, a motion sensor device, and a light-sensitive device.

4. A PDT according to claim 3 wherein said image differencer further comprises:

a pixel difference determiner for determining a pixel difference between said

20   decoded frame and a received image frame in the video receiver;

a pixel threshold comparator for comparing said pixel difference to a pixel threshold, wherein said pixel threshold is non-zero; and

a selection setter to set a selection result wherein said selection result equals a first value if said pixel difference exceeds said pixel threshold and said selection result equals a second value if said pixel threshold exceeds said pixel difference.

5   5.   A PDT according to claim 3 wherein said pixel threshold equals ten-percent root mean square of a plurality of pixels in an image frame.

6.   A PDT according to claim 3 wherein said clock mechanism further comprises:

a clock for determining a time-elapsed period;

10   a time threshold comparator for comparing said time-elapsed period with a specific interval, wherein said specific interval is non-zero; and

a selection setter to set a selection result wherein said selection result equals said first value if said time-elapsed period exceeds said specified interval, and said selection result equals said second value if said specified interval exceeds said time-elapsed

15   period.

7.   A PDT according to claim 3 wherein said voice activated device further comprises:

an audio detector for detecting an ambient sound received from an audio input

20   port;

a sound threshold comparator for determining whether said ambient sound has attained a sound threshold, wherein said sound threshold is non-zero; and

a selection setter to set a selection result wherein said selection result equals said first value if said ambient sound exceeds said sound threshold, and said selection result equals said second value if said sound threshold exceeds said ambient sound.

5 8.   A PDT according to claim 3 wherein said motion sensor further comprises:

a motion sensor for detecting whether a movement within an arc forward of said motion sensor; and

a selection setter to set a selection result, wherein said selection result equals said first value if said motion sensor detects said movement, and said selection result equals

10 said second value otherwise.

9.   A PDT according to claim 3 wherein said light-sensitive device further comprises:

a photon detector for detecting an ambient illumination received from a surrounding environment;

15 an albedo threshold comparator for determining whether said ambient illumination has attained an albedo threshold, wherein said albedo threshold is non-zero; and

a selection setter to set a selection result, wherein said selection result equals said first value if said ambient illumination exceeds said albedo threshold, and said selection result equals said second value if said albedo threshold exceeds said ambient

20 illumination.

10.   A PDT according to claim 1 further including:

a memory optimizer for calculating, based on a plurality of available memory segments, a maximum value for a first parameter from a set of three parameters after a

second parameter and a third parameter from said set are specified by a user, said set selected from the group consisting of a pixel per frame resolution, a number of image frames, and an audio recording duration; and

5   a memory allocator for allocating said plurality of memory segments based on said maximum value for said first parameter, said second parameter and said third parameter.

11.   A PDT according to claim 1 further including:

a network port for receiving a network data-stream at a known data-stream transfer rate, wherein said memory optimizer calculates a maximum audio recording duration;

10   a memory optimizer for calculating, based on a plurality of available memory segments, a maximum value for a first parameter from a set of three parameters after a second parameter and a third parameter being one of either a number of image frames or an audio recording duration; and

a memory allocator for allocating said plurality of memory segments based on said

15   maximum value for said first parameter, said second parameter and said third parameter.

12.   A portable digital terminal (PDT) for receiving, recording and playback of digital audio/visual (A/V) data, said PDT comprising:

a memory for storing a first received image to a first memory location as a first frame

20   and to a second memory location as a second frame;

a playback reader for retrieving said second frame from said second memory segment, while said memory is storing a second received image to said first memory location, said second frame being transferable to a video output port;

a buffer for temporarily storing a second received image; and

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a processor for storing said second received image in said memory if a condition

equals a first state, and not if said condition equals a second state.

13.   A PDT according to claim 12 further including:

5   a time marker for creating a time mark for a memory segment, wherein said time

mark corresponds to said encoded playback frame; and

a mark reader for finding said time mark.

14.   A PDT according to claim 1 further including:

10   an image encoder for producing an encoded frame from said first received image;

an image compressor for transforming said encoded frame from said encoder into a

compressed encoded frame for storing in said sequenced memory segment; and

an image uncompressor for transforming said compressed encoded frame into an

uncompressed encoded frame.

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15.   A PDT according to claim 1 further comprising:

a diagnostic identifier for determining whether a diagnostic condition has occurred,

wherein said diagnostic condition corresponds to a status that the user should be

informed;

20   a message selector for selecting a pre-programmed message corresponding to said

diagnostic condition; and

a message writer for sending said message to an A/V output port.

16.   A PDT according to claim 15 wherein said diagnostic condition may be selected from the group consisting of an available memory segment, an error status, a timeout, and a misconnection warning.

5   17.   A PDT according to claim 12 further including:

at least one card slot for receiving a memory card;

an input socket for receiving an optical device image signal;

a controls function panel, wherein said panel includes a power switch, a function selection, and a cursor positioner; and

10   a housing, wherein said at least one card slot, said input socket said controls function panel are interconnected within said housing.

18.   A method for receiving, recording and playback of digital audio/visual (A/V) data in a portable digital terminal (PDT), said method comprising:

15   storing a first received image in a first memory segment of a memory having a plurality of memory segments;

receiving a second received image;

measuring a condition, said condition being equal to one of either a first state or a second state; and

20   storing said second received image in a second memory segment of said memory if said condition is equal to said first state.

19.   A method according to claim 18 further including:

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storing said second received image in said first memory segment if said condition equals said second state.

20.   A method according to claim 18 further including:

5   calculating, by a memory optimizer for a plurality of memory segments, a maximum value for a first parameter from a set of three parameters after a second parameter and a third parameter from said set are specified by a user, said set selected from the group consisting of a pixel per frame resolution, a number of image frames, and an audio recording duration; and

10   allocating said plurality of memory segments.

21.   A method according to claim 18 wherein said measuring a condition further comprises one of the following:

measuring by an image differencer a pixel difference between said first received

15   image and said second received image, and comparing by said image differencer said pixel difference to a pixel threshold to obtain a selection result, wherein said condition is said first state if said pixel difference exceeds said pixel threshold and said condition is said second state if said pixel threshold exceeds said pixel difference;

measuring by a clock whether a time-elapsed period has attained a specified

20   interval, wherein said condition equals said first state if said time-elapsed period exceeds said specified interval, and said condition equals said second state if said specified interval exceeds said time-elapsed period;

measuring by a voice activated device whether an ambient sound received from the audio input port, such as through a microphone, has attained a sound threshold,

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wherein said condition equals said first state if said ambient sound exceeds said sound threshold, and said condition equals said second state if said sound threshold exceeds said ambient sound;

    measuring whether an ambient illumination received from a surrounding

5   environment has attained an albedo threshold, wherein said condition equals said first state if said ambient illumination exceeds said albedo threshold, and said condition equals said second state if said albedo threshold exceeds said ambient illumination; and

    measuring by a motion sensor whether a movement within an arc forward of said motion sensor is detected, wherein said condition equals said first state if said motion

10   sensor detects said movement, and said condition equals said second state otherwise.

22.   A method according to claim 18 further including:

    compressing said encoded image into a compressed encoded image;

    recording said compressed encoded image in said memory; and

15   uncompressing said compressed encoded image into an uncompressed encoded image.

23.   A method according to claim 18 further including:

    receiving a network signal, wherein said network signal is taken from the group

20   consisting of a network audio signal, a time marker, said pixel threshold, said specified interval, and said sound threshold.

24.   A method for receiving, recording and playback of digital audio/visual (A/V) data in a portable digital terminal (PDT), said method comprising:

storing a first received image in a first memory location as a first frame and a second memory location as a second frame, said first memory location and said second memory location being part of a memory;

retrieving said second frame by a playback device, while said memory is storing a

5   second received image to said first memory location;

transferring said second frame to a video output port.

25.   A method for receiving, recording and playback of digital audio/visual (A/V) data in a portable digital terminal (PDT), said method comprising:

10   storing a received image in a memory segment of a memory;

marking said memory segment to produce a time mark;

reading said time mark; and

writing said received image to a playback file.

15   26.   A method according to claim 25 further including:

adding an external audio signal to said playback file by an external audio receiver.

27.   A programmable storage device readable by a machine tangibly embodying a program of instructions executable by the machine to perform method steps for

20   receiving, recording and playback of digital audio/visual (A/V) data in a portable digital terminal (PDT), said method steps comprising:

storing a first received image in a first memory segment of a memory having a plurality of memory segments;

receiving a second received image;

measuring a condition, said condition being equal to one of either a first state or a second state; and

storing said second received image in a second memory segment of said memory if said condition is equal to said first state.

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28.   A programmable storage device according to claim 27 further including:

calculating, by a memory optimizer for a plurality of memory segments, a maximum value for a first parameter from a set of three parameters after a second parameter and a third parameter from said set are specified by a user, said set selected from the group

10   consisting of a pixel per frame resolution, a number of image frames, and an audio recording duration; and

allocating said plurality of memory segments.

29.   A programmable storage device readable by a machine tangibly embodying a

15   program of instructions executable by the machine to perform method steps for receiving, recording and playback of digital audio/visual (A/V) data in a portable digital terminal (PDT), said method steps comprising:

storing a first received image in a first memory location as a first frame and a second memory location as a second frame, said first memory location and said second memory

20   location being part of a memory;

retrieving said second frame by a playback device, while said memory is storing a second received image to said first memory location; and

transferring said second frame to a video output port.

30.   A programmable storage device readable by a machine tangibly embodying a program of instructions executable by the machine to perform method steps for receiving, recording and playback of digital audio/visual (A/V) data in a portable digital terminal (PDT), said method steps comprising:

5   storing a received image in a memory segment of a memory;

marking said memory segment to produce a time mark;

reading said time mark; and

writing said received image to a playback file.